

## 8.0 INTERNAL QUALITY CONTROL CHECKS

Internal QC checks are used to determine if analytical operations at the laboratory are in control, as well as determining the effect sample matrix may have on data being generated. Two types of internal checks are performed and are described as batch QC and matrix-specific QC procedures. The type and frequency of specific QC samples performed by the contract laboratory will be according to the specified analytical method and project specific requirements. Acceptable criteria and/or target ranges for these QC samples are presented in Table 6-1.

QC results which vary from acceptable ranges shall result in the implementation of appropriate corrective measures, potential application of data qualifiers, and/or an assessment of the impact these corrective measures have on the established data quality objectives. Quality control samples including any project-specific QC which will be analyzed, are discussed below.

### 8.1 BATCH QC

Method Blanks - A method blank is defined as laboratory-distilled or deionized water that is carried through the entire analytical procedure. The method blank is used to determine the level of laboratory background contamination. Method blanks are analyzed at a frequency of one per analytical batch.

Laboratory Control Samples - A laboratory control sample is an aliquot of standard control matrices spiked (fortified) with all the elements being analyzed for calculation of precision and accuracy to verify that the analysis that is being performed is in control. A laboratory control sample will be performed for each matrix and parameter for which it is applicable.

### 8.2 MATRIX-SPECIFIC QC

Matrix Spike Samples - An aliquot of a matrix is spiked with known concentrations of specific compounds/analytes as stipulated by the methodology. The matrix spike (MS) and matrix spike duplicate (MSD) are subjected to the entire analytical procedure in order to assess both accuracy and precision of the method for the matrix by measuring the percent recovery and relative percent difference of the two spiked samples. The samples are used to assess matrix interference effects on the method, as well as to evaluate instrument performance. MS/MSDs are analyzed at a frequency of one each per twenty samples per matrix. MS and/or MSDs will be performed for all parameters listed in Table 6-1 with the exception of the grain size analysis.

Blind Field Duplicates - The field duplicate (blind or unknown to laboratory) is two representative aliquots of the same sample which are prepared and analyzed identically. Collection of duplicate samples provides for the evaluation of precision both in the field and at the laboratory by comparing the analytical results of two samples taken from the same location. Every effort will be made to obtain replicate samples; however, due to interferences, lack of homogeneity, and the nature of the solid samples, the analytical results are not always reproducible. Duplicate samples are to be included at a maximum of ten percent per matrix.

### 8.3 ADDITIONAL QC

Rinsate (Equipment) Blanks - A rinsate blank is a sample of laboratory demonstrated analyte-free water passed through and over the cleaned sampling equipment. A rinsate blank is used to indicate potential contamination from sample instruments used to collect and transfer samples. One rinsate blank will be collected per twenty samples collected, or one rinsate blank will be collected for each day sediment sampling is conducted, whichever is greater.

Split Samples - Split samples (or QA samples) are used for performance audits or interlaboratory comparability of data. A split sample is defined as two separate samples taken from a single aliquot which has been thoroughly mixed or homogenized prior to the formation of the two separate samples. One split sample will be taken at a five percent frequency of all field samples and sent to a QA laboratory. The QA laboratory for this project is identified below. The QA laboratory will be notified approximately two weeks prior to any QA samples being shipped.

The QA laboratory shipping address is:

US Army Corps of Engineers  
CQAB Lab  
420 S. 18<sup>th</sup> Street  
Omaha, NE 68102-2586  
Attn: Laura Percifield  
Phone - (402) 444-4300

QA samples will be assigned in the field. A Laboratory Information Management System (LIMS) # will be applied to the labels, chain-of-custody records, and all correspondence for all QA samples shipped to the QA lab throughout the project. The LIMS # is 5012.